SANJAY DINESH

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EDUCATION

Vellore Institute of Technology, Chennai
B. Tech in Computer Science with a Specialization in Artificial Intelligence and Robotics
2023 - Present

- **CGPA**: 9.61/10
- **Awards**: Secured **Department Rank 10** in Year 1

EXPERIENCE

Dreadnought Robotics, Programming Team Member
Project MIRA

- Contributed to **MIRA**, an Autonomous Underwater Vehicle (AUV) designed for international underwater robotics competitions. MIRA secured **2nd place worldwide at TAC Norway**.
- Performed **data annotation** for **computer vision tasks** to enhance AUV perception capabilities.
- Developed and debugged a **keypoint detection model** using **MobileNetV2SSD** for detecting underwater gates. This model is being utilized for the **SAUVC (Singapore AUV Challenge)**.
- Enhanced **TAC Norway footage** for **image enhancement** using **OpenCV**, improving feature visibility of underwater pipelines.

PROJECTS

Obstacle Avoidance Robot

- Implemented the **YOLOv5** model to detect obstacles in the robot's path.
- Developed a **serial communication-based system** to relay object detection data for real-time navigation.
- Integrated **sensor fusion techniques**, combining camera vision with ultrasonic sensors for improved obstacle detection.
- Fine-tuned the **YOLOv5 training pipeline**, improving object detection accuracy in dynamic environments.

Autonomous Maze Solver Robot

IIT Techfest, Bombay Zonals – Global Academy of Technology, Bangalore

- Implemented a **Left-Hand Shortest Route Back (LSRB) Algorithm** for efficient maze solving.
- Contributed to the development of a **Proportional-Derivative (PD) control system** for precise **line tracking**, achieving speeds up to **1.5 m/s**.
- Experimented with **A*** and **Dijkstra's algorithms** for optimized path planning and shortest route computation.
- Explored **Bang-Bang Control** for rapid decision-making and real-time adjustments in high-speed navigation.

Rubik's Cube Solver via Deep Reinforcement Learning (Ongoing)

- Developing a **deep reinforcement learning-based approach** for solving Rubik's Cube efficiently.

CERTIFICATIONS

- **Machine Learning Specialization** – *Stanford University (Coursera)*